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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/701,585	01/02/2001	Tetsuya Fukunaga	199589USOPCT	6219

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EXAMINER

MEDINA SANABRIA, MARIBEL

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 10/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/701,585

Applicant(s)

FUKUNAGA, TETSUYA

Examiner

Maribel Medina

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10, 12-24, 26, 27 and 29-33 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

- 5) ☐ Claim(s) _____ is/are allowed.

- 6) ☒ Claim(s) 10, 12-24, 26-27, 29-33 is/are rejected.

- 7) ☐ Claim(s) _____ is/are objected to.

- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8, 14. 6) ☐ Other:

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 10, 12-24, 26, 27, and 29-333 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- a. Claim 15 recites the limitation "the hydrocarbon". There is insufficient antecedent basis for this limitation in the claim. The claim will be proper if "the hydrocarbon" is substituted by --the starting material--.

Claim Objections

4. Claim 19 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The claim depends from claim 17 in the alternative, to further delimit the ruthenium composition, however, claim 17 already has this limitation on the claim, it is suggested to change the dependency of claim 19 to claim 18.

5. Claims 19, 26 and 30 are objected to because of the following informalities:

- a. In claim 19, before "the ruthenium, --wherein-- should be inserted.

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b. In claim 26, before “the catalyst, --wherein-- should be inserted.

c. In claim 30, the phrase that reads “according to any of claims 17” should be deleted and substituted for --according to claim 17--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 17-20, 22, 23, 29, 30, 31, 32 and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 08-175805 (Tomohiro et al).

In regards to claims 17, 18, 19, 23 and 32, Tomohiro et al disclose a method for reforming hydrocarbon, comprising contacting the hydrocarbon and carbon dioxide gas with a catalyst (See [0001]).

The catalyst comprises an active metal such as ruthenium (See [0016]) in an amount in the range from 1.0 to 50% by weight in all catalyst (see [0017]) supported on an alumina support which may contain a metallic oxide such as zirconia in an amount in the range from 0.1 to 40 % by weight (See [0015]).

Tomohiro et al further discloses a methane/carbon dioxide ratio in the range from 0.05-25 (0.04-20 Carbon dioxide molecules/ carbon atoms in the hydrocarbons) (See [0008]).

In regards to claims 20, 22, 26, and 33, Tomohiro et al disclose that the support may comprise magnesium oxide in the range from 0.1 to 40 by weight (See [0015]).

In regards to claims 29 and 30 Tomohiro et al disclose that the hydrocarbon is methane or natural gas (see [0007]).

In regards to claims 31, Tomohiro et al does not disclose the use of steam, this clearly is meets the limitation of a "ratio of steam to carbon contained in the hydrocarbon is less than 10".

No difference is seen between the instantly claimed invention and Tomohiro et al disclosure.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 10, 12, 13, 14, rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,023,276 (Yarrington et al) in view of JP 09-029097 (Hironobu et al)..

Yarrington et al disclose a method for autothermal reforming to produce hydrogen or a synthesis gas, comprising contacting a feedstock as a starting material and a reforming gas comprising oxygen, carbon dioxide and steam with a catalyst (See col. 3, lines 1-5).

Yarrington et al disclose a ratio of water molecules to carbon atoms in the hydrocarbon in the range from 0.5 to 5 and a ratio of oxygen molecules to carbon atoms in the hydrocarbon in the range from 0.4 to 0.65 (See col. 3, lines 5-15).

Yarrington et al disclose the use of a ruthenium metal supported on zirconia (See col. 5, lines 43-50, and col. 6, lines 44-50).

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Yarrington et al disclose the use of ruthenium supported on zirconia, however fail to disclose the specific concentration of the ruthenium (as in instant claim 10) and the specific amount of zirconium (as in instant claim 12).

Hironobu et al disclose a catalyst comprising from 0.05 to 5 % by weight zirconium and a ruthenium content of 0.5 % by weight (See [0010] and [0057]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the ruthenium and zirconium catalyst composition taught by Hironobu et al in Yarrington et al process, since Yarrington et al disclose that the catalyst to be used in his process should provide for low levels of coking containing zirconium and ruthenium (See col. 6, lines 54-68), and since Hironobu et al catalyst is a zirconium and ruthenium-containing catalyst provides low levels of coking (See [0002]).

Yarrington et al disclose the use methane and alcohols as the hydrocarbon feedstock (See col. 17, lines 5-25).

10. Claims 21, 24 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiro et al in view of Hironobu et al.

Tomohiro et al apply herein as above. Tomohiro et al disclose the inclusion of cobalt (see [0016]), however fail to disclose the ratio of cobalt to ruthenium on the catalyst.

Hironobu et al disclose a catalyst comprising from 0.05 to 5 % by weight zirconium and a ruthenium content of 0.5 % by weight (See [0010] and [0057]) further comprising cobalt, wherein the ratio of cobalt and ruthenium is in the range from 0.1 to 30 (See [0011]).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used cobalt in Tomohiro et al process in the amounts as taught by Hironobu et al since they are used in similar process for reforming hydrocarbons.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maribel Medina whose telephone number is (703) 305-1928. The examiner can normally be reached on Monday through Friday from 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (703) 308-3837. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Maribel Medina 
Examiner
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